

**Amendments to the Claims:**

This listing of claims will replace all prior versions of claims in the application.

**Listing of Claims:**

1. (original) A method for producing a xanthophyll from a photosynthetic microalga, comprising:  
a growth step of inoculating a photosynthetic microalga containing a xanthophyll into a nutrient medium to grow the photosynthetic microalga; and  
an encystment step of encysting the grown microalga.
2. (original) The method of claim 1, wherein the inoculated photosynthetic microalga containing the xanthophyll is an encysted photosynthetic microalga.
3. (original) The method of claim 1 or 2, wherein the growth step and the encystment step are performed in a same culture tank.
4. (currently amended) The method of ~~any one of claims 1 to 3~~ claim 1 or 2, wherein the growth step and the encystment step are performed using a low nutrient medium.
5. (currently amended) The method of ~~any one of claims 1 to 4~~ claim 1 or 2, wherein the growth step and the encystment step are performed by batch culture.
6. (original) The method of claim 1 or 2, wherein the growth step and the encystment step are performed independently using different media.
7. The method of claim 6, wherein the growth step and the encystment step are performed independently by batch culture.
8. (currently amended) The method of ~~any one of claims 1 to 7~~ claim 1 or 2, wherein the growth step and the encystment step are performed under light irradiation.
9. (currently amended) The method of ~~any one of claims 1 to 8~~ claim 1 or 2, wherein the microalga is a green alga belonging to the genus *Haematococcus*.
10. (currently amended) The method of ~~any one of claims 1 to 9~~ claim 1 or 2, wherein the green alga is *Haematococcus pluvialis*.
11. (currently amended) The method of ~~any one of claims 1 to 10~~ claim 1 or 2, wherein the xanthophyll is astaxanthin.
12. (original) A photosynthetic microalga having a zoospore containing a xanthophyll.